

REMARKS

By this amendment, Claim 18 has been amended, and no claims have been canceled or added. Thus claims 1-18 are currently pending. The amendments to the claims as indicated herein do not add any new matter to this application. Furthermore, amendments made to the claims as indicated herein have been made to exclusively improve the identification of the subject matter of which patent protection is desired and not for the purpose of overcoming any alleged prior art. All issues raised in the Office Action are addressed below.

IT IS PROPER TO ENTER THE AMENDMENTS TO CLAIM 18

After a final rejection, any amendment that will place the application in condition for allowance or in better form for appeal may be entered. *MPEP 714.12*. The amendments to Claim 18 as indicated herein comply with objections or requirements as to form are to be permitted after final action in accordance with *CFR1.116(b)* and do not add any new matter to this application. Claim 18 has been amended to conform Claim 18 to Claim 9. Claim 18 features limitations similar to those with respect to Claim 9 respectively, except that Claim 18 is recited in computer-readable medium format. Upon analysis for this Office Action, Applicant discovered that Claim 18 erroneously did not conform to the same limitations as Claim 9. Applicant respectfully requests Examiner to enter the amendment for Claim 18.

ALL PENDING CLAIMS CONFORM TO 35 U.S.C. § 101

Claims 1-18 have been rejected under 35 U.S.C. § 101 because the claims are allegedly directed towards non-statutory subject matter. More specifically, the Office Action states that

“... the claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They [the claims] are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material per se. Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” Both types are nonstatutory when claimed as descriptive material per se.”

Claims 1-9 are directed towards a method, which is a process. A process is expressly identified as statutory subject matter under 35 U.S.C. § 101. Therefore, Claims 1-9 are directed towards statutory subject matter. Claims 1-9 feature approaches for reducing the amount of time and resources that are required to recover a database system. Claim 1 recites “**maintaining a checkpoint value** that indicates which records of a plurality of records have to be processed after the failure, wherein the plurality of records indicate changes for a plurality of data blocks; and **writing changes from volatile memory to nonvolatile memory to advance the checkpoint value** based on a user-specified value that corresponds to how much work will be required during a redo phase of recovery.”

Claim 1 is a process that ‘maintain[s] a checkpoint value.’ In order to maintain this value, Claim 1 “writ[es] changes from volatile memory to nonvolatile memory to advance the checkpoint value.” “Writing changes from volatile to non volatile memory” is a tangible and useful act which falls within the statutory subject matter under 35 U.S.C. § 101. Thus, Claim 1 is not “functional descriptive material” or “nonfunctional descriptive material”. Consequently, it is respectfully submitted that Claim 1, and dependent claims 2-9, are directed towards statutory subject matter.

A computer-readable medium that carries instructions that may be executed by a computer is an article of manufacture, and as such, is expressly recognized by 35 U.S.C. § 101 as being patentable subject matter. The Patent Office has long recognized that a computer-readable medium, which carries one or more sequences of instructions, which when executed, cause the performance of steps that are patentable subject matter, is itself patentable (see *In re Beauregard*). Claims 10-18 are each alleged to be non-statutory for “claiming nonfunctional descriptive material . . . stored on a computer readable medium.” However, a computer-readable medium that carries one or more sequences of instructions, which when executed, writes changes from volatile to non volatile memory is a tangible and useful result, as explained above. Because the step of writing changes results in a tangible and useful result, the limitation is not nonfunctional descriptive material. Therefore, Claims 1-18 must be directed towards statutory subject matter under 35 U.S.C. § 101.

Therefore, the rejection of Claims 1-18 is respectfully requested to be withdrawn.

THE PENDING CLAIMS ARE PATENTABLE OVER THE CITED ART

Claims 1-3, 6-12 and 15-18 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over applicant’ background, specification page 1, paragraph [004] to page 9, paragraph [0028], (Applicant Admitted Prior Art) (“*APA*”) in view of U.S. Patent 5,721,918 issued to Nilsson et al., (“*Nilsson*”) and in further view of U.S. Patent 5,524,205 issued to Lomet et al. (“*Lomet*”). Applicants respectfully traversed.

Even if the cited art were to be properly combined, each of the pending claims recites at least one element that is not disclosed, taught, or suggested by the cited art, either individually or in combination.

Claim 1

Claim 1 recites:

“maintaining a checkpoint value that indicates which records of a plurality of records have to be processed after the failure, wherein the plurality of records indicate changes for a plurality of data blocks; and writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on a user-specified value that corresponds to how much work will be required during a redo phase of recovery”

At least the above-bolded element of Claim 1 is not disclosed, taught, or suggested by *APA, Nilsson or Lomet*, either individually, or in combination.

Claim 1 recites the element of “writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on a user-specified value that corresponds to how much work will be required during a redo phase of recovery.” The Office Action states that “*APA [and] Nilsson fail to explicitly disclose*” this limitation. However, *Lomet* also fails to disclose “writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on a user-specified value that corresponds to how much work will be required during a redo phase of recovery.” There is no teaching or suggestion anywhere in *Lomet* of writing changes from volatile memory to nonvolatile memory based on a user-specified value that corresponds to how much work will be required during a redo phase of recovery. Rather, the sections identified by the Office Action disclose copying “dirty” blocks from volatile to persistent storage and an analysis phase to update a system state. However, *Lomet* fails to

discuss or suggest any user-specified value that corresponds to how much work will be required during a redo phase of recovery, let alone writing changes from volatile memory to non-volatile memory based on such a user-specified value. Consequently, this element cannot be disclosed, taught, or suggested by *Lomet*.

Similarly, as admitted within the Office Action, this element is not taught or suggested by *APA* or *Nilsson*. No portion of *APA* or *Nilsson* is alleged to show, or does in fact show, this subject matter. Consequently, even if *Lomet* were to be combined with *Nilsson* and the *APA*, the resulting combination would still fail to teach or suggest the above-bolded element.

As at least one element is not disclosed, taught, or suggested by the *APA*, *Nilsson*, or *Lomet*, either individually or in combination, it is respectfully submitted that Claim 1 is patentable over the cited art and is in condition for allowance.

Claim 9

Claim 9 recites:

“maintaining a checkpoint value that indicates which records of a plurality of records have to be processed after the failure, wherein the plurality of records indicate changes for a plurality of data blocks;
determining a required recovery time, wherein the required recovery time indicates a maximum length of time that is to be allowed for recovering after said database system failure; and
writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on the maximum number of data block reads that can be performed in the required recovery time”

At least the above-bolded element of Claim 9 is not disclosed, taught, or suggested by *APA*, *Nilsson*, or *Lomet*, either individually, or in combination.

Claim 9 recites the element of “writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on the maximum number of data block reads that can be performed in the required recovery time.” The Office Action states that “*APA [and] Nilsson fail to explicitly disclose*” this limitation. However, *Lomet* also fails to disclose “writing changes from volatile memory to nonvolatile memory to advance the checkpoint value based on the maximum number of data block reads that can be performed in the required recovery time.” There is no teaching or suggestion anywhere in *Lomet* of writing changes from volatile memory to nonvolatile memory based on the maximum number of data block reads that can be performed in the required recovery time. Rather, the sections identified by the Office Action disclose copying “dirty” blocks from volatile to persistent storage and an analysis phase to update a system state. However, *Lomet* fails to discuss or suggest any maximum number of data block reads that can be performed in the required recovery time, let alone writing changes from volatile memory to non-volatile memory based on such a maximum number of data block reads. Consequently, this element cannot be disclosed, taught, or suggested by the *Lomet*.

Similarly, as admitted within the Office Action, this element is not taught or suggested by *APA* or *Nilsson*. No portion of *APA* or *Nilsson* is alleged to show, or does in fact show, this subject matter. Consequently, even if the *Lomet* were to be combined with *Nilsson* and the *APA*, the resulting combination would still fail to teach or suggest the above-bolded element.

As at least one element is not disclosed, taught, or suggested by the *APA*, *Nilsson*, or *Lomet*, either individually or in combination, it is respectfully submitted that Claim 9 is patentable over the cited art and is in condition for allowance.

Claims 2-8 and 10-18

Claims 10 and 18 feature limitations similar to those discussed above with respect to Claims 1 and 9 respectively, except that Claims 10 and 18 are recited in computer-readable medium format. Consequently, for at least the reasons given above with respect to Claims 1 and 9, it is respectfully submitted that Claims 10 and 18 are patentable over the cited art and are each in condition for allowance.

Claims 2-8 and 10-17 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 2-8 and 10-17 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 2-8 and 10-17 introduces one or more additional limitations that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those limitations is not included at this time, although the Applicants reserve the right to further point out the differences between the cited art and the novel features recited in the dependent claims.

CONCLUSION

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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Dated: 2/20/07


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